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to men of science, we may be prejudiced, but it does seem that 'Mr. Punch' is always a gentleman, whereas *Life* is on occasion distinctly vulgar.

THE Rev. J. G. Hagen, of the Georgetown College Observatory, announces that the first series of charts of his Atlas of Variable Stars is nearly printed and will be issued in a few weeks. The cost of engraving and printing the whole Atlas will be about \$7,000 and, though one-fourth of this sum has been given by Miss Catherine Bruce, it is necessary that one hundred subscribers to the entire series be obtained in order that expenses of engraving and printing can be guaranteed and its completion secured. The present series contains twenty-four charts and is sold to subscribers to the whole series at one Mark per chart. The work is published by Herr. F. L. Dames, of Berlin, but subscriptions may be sent through the Harvard College Observatory or through the Georgetown College Observatory.

SCIENTIFIC JOURNALS AND ARTICLES.

Terrestrial Magnetism for December, 1898, contains the following articles: 'Report of the Permanent Committee on Terrestrial Magnetism and Atmospheric Electricity to the International Meteorological Conference,' 'The Toronto Magnetic Observatory,' R. F. Stupart; 'The Attitude of the Aurora above the Earth's Surface' (concluded), C. Abbe; 'Bigelow's Solar and Terrestrial Magnetism,' reviewed by Arthur Schuster; 'Notes on the Magnetic Storm of November 21st-22d, and on the Secular Motion of a Free Magnetic Needle,' by L. A. Bauer. Mr. Stupart in his article describes the new Toronto Magnetic Observatory, situated at Agincourt, nine miles northeast of the old and disturbed site. Beginning with March, 1899, the name of the journal is to be changed to *Terrestrial Magnetism and Atmospheric Electricity*. It has been found necessary to enlarge the periodical somewhat, and, in consequence, the subscription price has been increased from \$2 to \$2.50. It will be conducted, as heretofore, by L. A. Bauer and Thomas French, Jr., both of the University of Cincinnati. The editors will be assisted by Messrs. Eschenhagen (Pots-

dam), Moureaux (Paris), Littlehales (Washington), Schuster (Manchester), Elster and Geitel (Wolfenbüttel), McAdie (New Orleans), and by an international council consisting of Rücker (England), von Bezold (Germany), Mascart (France), Rykatschew (Russia), Mendenhall and Schott (America).

The American Journal of Science for January contains the following articles:

'Thermodynamic Relations of Hydrated Glass,' by C. Barus; 'Platinum and Iridium in Meteoric Iron,' by J. M. Davison; 'Studies in the Cyperaceæ,' by T. Holm; 'Regnault's Calorie and our Knowledge of the Specific Volumes of Steam,' by G. P. Starkweather; 'Estimation of Boric Acid,' by F. A. Gooch and L. C. Jones; 'Descriptions of imperfectly known and new Actinians,' with critical notes and other species, II.; by A. E. Verrill; 'Mineralogical Notes,' by W. F. Hillebrand; 'What is the Loess?' by F. W. Sardeson; 'Absorption of Gases in a High Vacuum,' by C. C. Hutchins.

Appleton's Popular Science Monthly for January gives as a frontispiece a portrait of August Kekulé and a sketch of his life and contributions to science follows. Among the other articles in the number are 'The Mind's Eye,' by Professor Joseph Jastrow, illustrating the part played by mental processes in visual perception; an argument by Professor G. T. W. Patrick, maintaining that children under ten should not be taught to read and write; and nature study in the Philadelphia Normal School, by Mrs. L. L. W. Wilson.

SOCIETIES AND ACADEMIES.

THE NEBRASKA ACADEMY OF SCIENCES.

THE ninth annual meeting of the Nebraska Academy of Sciences was held at Lincoln, November 25 and 26, 1898.

The address of the retiring President, Dr. H. B. Ward, was upon the 'Fresh-water Biological Stations of the World.'

These were divided into individual resorts for independent investigation, periodical resorts where groups of scientists go for a portion of the year, and permanent stations where work is carried on throughout the year by resident investigators. The best results can only be expected in the latter class, which are necessarily under government protection.

On the evening of November 25th, after a banquet tendered to members of the Academy and their wives by the Lincoln members, an address was given before the Academy by Professor Lawrence Bruner, on the 'Flora and Fauna of Argentina, S. A.,' where he has spent the past year investigating a grasshopper plague.

Professor Bruner first gave a few facts regarding the location and shape of Argentina, its climate and the effect of the climate on plant and animal life. A very large portion of Argentina has an average of less than eight inches of rainfall per annum; another portion has an average rainfall of from eight to twenty-four inches, while another has from twenty-four inches to sixty. Still all this territory is inhabited and is well supplied with plant and animal life. Here evolution in plant and animal life is most noticeable, every form of vegetation and all kinds of animal life changing as the climate changes in traveling from one portion of the country to the other. Argentina was a country where everything protected itself and was fitted by nature to do so. The trees had thorns, the grasses and weeds were provided with thorns, and pointed, sharp blades and herbaceous plants were shielded with burrs. In the driest parts of Argentina Professor Bruner said he had found plant and animal life abundant. Forests of large trees could be found where rain was scarcest, and he had been told that when heavy rains fell the trees would die from too much moisture. Many forms of animal life thrived best where there was no moisture. Plants were found without leaves, and birds of the same order as our water fowl that avoided water. In no other country on the earth, excepting perhaps Australia, could forms of animal life be found that compared with what was to be found there. Many kinds of birds were provided with spurs on their wings, and to illustrate some of these wonders the stereopticon was introduced and a number of views of strange animal life shown.

Other papers on the program were as follows: 'Methods of Collecting and Preserving Water-Mites,' by Dr. Robert H. Wolcott, with exhibition of new forms of collecting apparatus. 'The Discovery of the Southern Maidenhair Fern in the Black Hills,' by Dr. Charles E. Bessey. It had been reported to him that it

grew there in profusion, but as its northern limit was about 36 degrees, or the southern line of Missouri, he took a thousand-mile journey that he might be able to state scientifically that it was there. He found it growing in profusion on the banks of a stream fed by warm springs, beside the buffalo berry of the north.

C. J. Elmore read the second chapter of his serial, begun last year, on 'The Second Year's Flora of a Dried-up Millpond,' and was requested to continue the subject next year.

'One to One Correspondence,' by Dr. Ellery Davis. 'A Determination of the Latitude of the Observatory,' by Professor G. D. Swezey. The reduction of fifty-nine observations for the latitude of the observatory on the University grounds, made with a small universal instrument, gave as a result $40^{\circ} 49' 9.79 \pm 0.74$. Over a hundred additional observations have been taken which have not yet been reduced.

A joint paper by Abel A. Hunter and G. E. Hedgecock on 'Thorea,' a seaweed found by Mr. Hunter in the northeastern part of Lancaster county the past summer, was submitted. This very rare and exceedingly interesting seaweed is now found for the first time in Nebraska and the second time with certainty in North America.

'What is Phytogeography,' by Dr. Roscoe Pound. A discussion of the province of phytogeography and of the various names that have been used to designate this and other closely related lines of investigation.

'The Growth of Children,' by Dr. William W. Hastings. Observations made in European cities and in the larger cities of this country, with the results of experience in the University and public schools of Lincoln. From two to sixteen years the growth of children is very regular, but from sixteen to seventeen it is retarded. The full growth of man does not cease until after he is twenty-five. Athletics extend the growing period to thirty years. Affluence increases and deprivation and hard work decreases the growth. Size diminishes between the age of fifty and sixty. The speaker mentioned the phenomenal increase of five and seven-eighths inches chest measure in a 15-year-old boy, but the discussion brought out the fact that his grade marks were only seventy-five.

Ernest A. Bessey, in 'How some Pistils close up,' gave a study of the pistils of the buttercup and larkspur.

'Observations on the Leonid Meteors of 1898,' by Professor G. D. Swezey. Observations made simultaneously at Lincoln, Crete and Beatrice, from which the heights and actual paths of a number of the meteors was determined.

A. B. Lewis read a paper on 'The Occurrence of a Fresh-water Nemertine in Nebraska,' which described a marine animal which has been discovered in fresh water near the round house.

Miss Carrie Barbour showed geodes from the Bad Lands, formations which are called by the cowboys blossom-stones.

Notes on the 'Falling of Leaves from a Cottonwood Tree,' by C. J. Elmore, described a tree sixteen inches in diameter and forty-five feet high. The cottonwood was shown to adapt itself to climates and conditions and to be unaffected by the change of seasons.

Dr. R. H. Wolcott, of the zoological department, read a paper on 'The Hydrachnidæ of Nebraska.' He had already found sixteen new species and one new genus.

The geology of Lincoln's surroundings, as described last year by C. A. Fisher, was illustrated by charts and outlines by Miss Barbour.

The following papers were read by title only: 'Botanical Notes for the Year 1898,' by Dr. C. E. Bessey. 'Fossil Bryozoans of Nebraska,' by Mr. G. E. Condra. 'Some new Grasshoppers and other related Insects from Argentina,' by Professor Lawrence Bruner. 'A new Bird Tape Worm,' by Mr. Geo. E. Condra. 'On the Poisonousness of Pure Water,' by Dr. A. S. von Mansfelde. 'Obituary of Professor Wells H. Skinner,' by Mr. A. T. Bell.

The following persons were elected to honorary membership in the Academy: Alexander Agassiz, LL.D.; John M. Coulter, LL.D.; Professor Samuel H. Scudder; Joseph Le Conte, LL.D.; Simon Newcomb, LL.D.; Dr. Otto Kunze; Professor Victor Hensen.

The election for officers resulted as follows: President, Professor G. D. Swezey, of Lincoln; Vice-President, Dr. H. Gifford, of Omaha; Secretary and Custodian, Professor Lawrence Bruner, of Lincoln; Treasurer, G. A. Loyeland; Directors, Professor Charles Fordyce, of Univer-

sity Place, and Professor J. H. Powers, of Crete; Professor H. Brownell, of Peru.

SCIENCE CLUB OF NORTHWESTERN UNIVERSITY,
EVANSTON, ILLINOIS.

At the December meeting of the Science Club, of Northwestern University, Professor A. R. Crook, of the department of mineralogy, read a paper on 'Notes on Russian Geology.'

Until within recent years the number of Russians working in geology has been insignificant. The results of their work have for the most part been published in a language inaccessible to non-Russians. The police barrier erected by the government against travelers has kept out foreign geologists. Hence our knowledge of Russian geology has been meagre. The meeting of the International Geological Congress in St. Petersburg was an event of great importance. A hundred workers from other lands visited mines and formations from one part of the country to the other, and thus gained a personal knowledge of Russian geology, an acquaintance with the tasks and methods of work of Russian geologists, and an inclination to learn the Russian language. Russian geology offers interesting material in paleontology, mineralogy and general geology. The first contains less of importance than the last two.

The topaz, turmaline, emerald, alexandrite, phenacite, amethyst, rhodonite, malachite, platinum, gold and a hundred other less valuable minerals found in the Urals shed light upon the association, occurrence and genesis of minerals, while exhibiting the species in most perfect form.

The crystallines and eruptives of Finland and the Urals, the question of the Silurian in the Urals, the development of the Permian, the Carboniferous of South Russia, the igneous rocks of the Caucasus, together with their present glaciers, and the glacial deposits which cover the larger part of Russia, court investigation and attract the petrologist, the glaciologist, the stratigrapher, the physiographer, the paleontologist.

Natural and cut gems, maps and lantern slides were used in illustration.

WM. A. LOCY,
Secretary.

THE CHEMICAL SOCIETY OF WASHINGTON.

THE regular meeting was held on November 10, 1898.

The first paper of the evening was read by Mr. F. K. Cameron, and was entitled 'Some Boiling-point Curves for Mixtures of Miscible Liquids.' The general properties and significance of pressure-concentration and temperature-concentration curves for pairs of perfectly miscible liquids were indicated, and the researches of Konowaloff, Nernst and others briefly cited. All the possible types now known were illustrated by some as-yet-unpublished data from a preliminary investigation by Cameron and Thayer. A significant fact brought out by certain of these curves, notably the one for alcohol-chloroform mixtures, is that they possess not only a maximum and minimum point, but there is a decided sag in the opposite direction at another portion of the curve. So far no such curve is known which has both a maximum and minimum point, and the possibility of such a case has been denied by some authorities. But the fact just cited shows an indubitable tendency towards such a case and indicates that by a suitable choice of the constant factor (temperature or pressure) for some pair of liquids such a curve may yet be found. The great desirability of further experimental work in this field, both for theoretical and practical reasons, was indicated.

The second paper was by Mr. F. K. Cameron, and was entitled 'A Ternary Mixture.' Given a mixture of two perfectly miscible liquids, A and B, and a third substance, C, soluble in one constituent of the pair, at a definite temperature there will be a separation of the liquid mixture into its constituents, this definite temperature being dependent on the relative concentrations of the solution. By keeping C in excess of the amount soluble the problem is somewhat simplified. The results of a preliminary investigation on the curve for temperature of separation-concentration, presence of a third substance soluble in only one constituent, were presented. Further, the third substance, C, was varied for certain concentrations. And, finally, mixtures of the substances which had been used as C were tried. The results were interesting, but

no causal connection could be detected. It is essential that more experimental evidence shall be in our possession before a satisfactory theory of the phenomena will be possible.

The third paper was read by Dr. T. M. Chatard and was entitled 'Note on the Rate of Loss in Cyanide Solutions.' Dr. Chatard exhibited a sheet of curves representing the rate of loss of cyanide in solutions used for the extraction of gold in the electrolytic sluice. There is always a certain loss due to oxidation of the cyanide through agitation of the solution during the operation of the apparatus. Another loss results from the action of the ore on the solution. An electric current of about 0.2 amp. per sq. ft. of cathode plate and of about 2 volts is employed, and it is desirable to know what effect such a current has upon the solutions which usually contain from 0.20 to 0.25 per cent. KCN at the start. Samples of the solution were taken at regular intervals during each run, the percentage of cyanide giving points of the curve. When ore is treated, the curves usually show a rapid loss of cyanide during the first period of fifteen minutes, due to the action of the ore, the rate of loss then decreasing so that the final result is often a fairly regular curve. When the solution is run with neither ore nor current the fall in strength is usually regular, so that the line connecting any three consecutive points is practically straight. Using the customary current but no ore, other conditions being alike, the results indicate that the cyanide losses are lessened even though the tests are, as yet, too few for positive evidence. It may, however, be stated with confidence that the use of electricity, so important for the extraction of precious metals from ores and solutions, is not attended by any increased loss of the expensive cyanide.

The last paper was read by Dr. C. E. Munroe and was entitled 'The Examination of Acid for Use in the Manufacture of Gun-cotton.' Dr. Munroe's paper contained a summary of work done by his assistants, Mr. G. W. Patterson and Mr. J. J. Tobin, and by him. The specifications for the acids given were accompanied by descriptions of the analytical methods and methods of calculation to be followed in the inspection of the acids supplied, and a com-

parison was made between these methods and others that have been proposed. Attention was called to the necessity of defining the substances present by the methods by which they are to be determined and reckoned, as it not infrequently happens that there are differences of opinion as to the form in which they occur and the methods for determining them, and a dispute is most easily avoided by a prior technical convention. Thus there is a difference of opinion as to the form in which a portion of the nitrogen present in these acids occurs, some regarding it as in the form of hyponitrous acid, others as nitrosulphuric acid, but without expressing any opinion on this point the specifications simply required that it should be determined in a carefully prescribed manner and reckoned as N_2O_4 , and that as thus determined and reckoned it should not exceed a certain percentage of the mixture. The data of a considerable number of analyses showing the percentage composition and specific gravities of both original acids and spent acids from the gun-cotton manufacture was given, and the differences between the amounts of sulphuric acid in the different operations was seen to be remarkably constant, showing the mixture to be well proportioned for this purpose. Observations were made on the permanency of composition of the mixed acids stored in darkness and in sunlight; on the color of the acids as a criterion of the amount of nitrogen oxides present; on the change of color produced by heating them; on the freezing of the acids and the rate of expansion of different mixtures. The specific-gravity bottle used, which was devised by Professor Barker, and which was particularly adapted to this work, was exhibited.

WILLIAM H. KRUG,
Secretary.

HARVARD UNIVERSITY: STUDENTS' GEOLOGICAL CLUB, DECEMBER 6, 1898.

MR. P. S. SMITH described 'An Occurrence of Corundum in Kyanite.' This paper will be published soon in full. Mr. J. M. Boutwell spoke on 'Tides: Their Character and Cause.' After reviewing our incomplete knowledge of tides in the open ocean, he explained a method of expressing, with plotted curves, certain facts

obtained from observations on tides, as they traverse continental shelves and estuaries. These curves show a perfect homology between wind waves and true tidal waves in form, range, length (better termed breadth) and velocity. Under the cause of tides, the main points of the explanation advocated by Hagen, Airy, Darwin and others were presented.

Geological Conference, December 13, 1898.—In a communication entitled 'Dikes and Veins,' Professor Shaler considered the origin of fissures occupied by these bodies. Field observation near the Spokane Placer, Montana, shows that intrusives part rocks along bedding planes more readily than transverse to them. Professor Shaler suggests that water, mechanically included in beds at the time of their deposition, becomes heated by an approaching, intrusive mass; and that by expanding it opens the way for the intrusion along previously existing, structural planes. According to this theory, in a region where the intrusives are of different age, the earliest intrusive should show evidence of its easy entrance along fissures opened by expanded water; and subsequent intrusives should exhibit signs of more difficult entrance, owing to the exhaustion of assisting waters.

Mr. Robert DeC. Ward presented 'Some Observations on the Médanos of Peru,' which will be published in a future issue of this JOURNAL.

J. M. BOUTWELL,
Recording Secretary.

TORREY BOTANICAL CLUB, NOVEMBER 30, 1898.

ON discussion of enlargement of the program for excursions, it was arranged that field meetings be provided on Saturdays after the first of January, for the purpose of studies of cryptogams and of winter stages of higher plants.

The first paper was by Mr. Marshall A. Howe, 'Remarks on some Undescribed Californian Hepaticæ,' and consisted of the description of three new species, soon to be published. Beautiful plates illustrating these species were exhibited, the work of Mr. Howe, to form part of the forthcoming volume of the *Memoirs of the Torrey Club*.

The second paper was by Professor Francis E. Lloyd, on 'The Nucleus in Certain Myxo-

mycetes and Schizophyceæ.' Mr. Lloyd remarked that the work of Strasburger (1884), and later of Lister, gives evidence that the nucleus of the Myxomycetes is a definite organ possessed of a nuclear membrane and containing chromatin. During cell-division the chromatin is segregated into rounded masses lying in the nuclear plate. A spindle is formed. After the formation of a fine nuclear membrane the spindle fibres gradually disappear. The small number of these parallel fibres and absence of a cell-plate led Strasburger to compare the nucleus to the animal rather than the plant type. Precisely similar conditions are, however, found in some plant cells.

The presence of a nucleus in the Schizophyta has been a point of controversy. Bütschli asserts the nuclear character of the central body, and regards the red granules as chromatin. A. Fischer denies the accuracy of the former's conclusions, the question remaining an open one. When our knowledge is complete it is highly probable that the nucleus will be found to be of the distributed type, of a type, therefore, comparable to that of the simpler protozoa. In any case the nucleus of the lowly plants is much more primitive than that of the Myxomycetes. We are led, therefore, to regard these curious, much-debated forms, the Myxomycetes, as either plants of a higher type than the Schizophyta, which have degenerated, or as animals related probably to the sporozoa. For the former view there is now little evidence.

The Secretary addressed the Club briefly regarding the discarded species *Aster gracilentus*, T. & G., and exhibited its type specimen, which formed a sheet of the herbarium of M. A. Curtis, now at Princeton, and was exhibited through the courtesy of Professor George Macloskie, of that University.

Mr. Howe exhibited a number of examples of *Wolffia*, discovered floating in Van Cortlandt Lake, constituting the third recorded collection within New York State of this minutest of flowering plants.

Dr. Rusby exhibited a *Paulownia* blossom in which half an anther had grown on the outside of the corolla. Dr. Britton reported two interesting additions to the collections of the New York Botanic Garden: 1st, a valuable collec-

tion of photographs illustrating the cultivation of the poppy in Asia Minor; and 2d, a gift to the Garden from Mr. Peter Barr, the English horticulturist, of a collection of *Narcissus* and *Pæonia* for planting in the Botanic Garden. The claim of free entry as museum material was at first refused by the New York custom house; but, after five different appeals, the final decision was that the material was proper to an outdoor museum, and free entry was granted.

EDWARD S. BURGESS,
Secretary.

DISCUSSION AND CORRESPONDENCE.

THE PUMAS OF THE WESTERN UNITED STATES.

A RECENT examination of Rafinesque's description of *Felis Oregonensis* (*Atlantic Journal*, Vol. 1, No. 2, page 62, summer of 1832) brings up an interesting question as to the relationship of this name and those recently proposed by Dr. C. Hart Merriam for the Pumas of our Western States.

Rafinesque in the above article describes two species. The second of these is *Felis macroura*, based on an account in Leraie's Travels, of an animal resembling the Conguar of the Alleghanies, but not larger than a cat, 'with tail as long as the body, which is from one to two feet long only.' The source of this information is unreliable and the probability is that no such animal existed.

The first species described is, however, of more importance. Rafinesque's description is as follows:

"1. Var. *Oregonensis*. Dark brown, nearly black on the back, belly white; body six feet long, three high, tail two or three feet long. A large and ferocious animal of the mountains. Is it not a peculiar species? *Felix* [sic] *oregonensis*."

In the introductory paragraph of the article he says: "In addition to the article on our Couguars, page 19, I have to state that several other varieties of tygers are found in the western wilds of the Oregon mountains, or east and west of them, which deserve to be noticed. I find in my notes that two other varieties of Couguar have been seen there east of the mountains."

The *Felis macroura*, he states distinctly,